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Entitled: 256 MEG DYNAMIC RANDOM ACCESS MEMORY

Complete set of Pending Claims

223. (Amended) A voltage reference circuit responsive to an external voltage for supplying a reference voltage, comprising:

an active reference circuit for receiving the external voltage and for producing a reference signal having a desired relationship with the external voltage, said active reference circuit comprising a current source utilizing a current mirror for providing current to a diode stack having an adjustable impedance; and

a unity gain amplifier responsive to said reference signal for producing the reference voltage.

225. (Amended) The voltage reference circuit of claim 223 wherein said diode stack includes a plurality of transistors connected in series, with each transistor's gate connected to a common potential, and a plurality of switches each for selectively shunting one of said transistors.

226. The voltage reference circuit of claim 225 wherein said switches are controlled by fuses, and wherein opening certain of said fuses turns its associated switch on, and wherein opening certain other of said fuses turns its associated switch off.

227. The voltage reference circuit of claim 226 wherein said plurality of transistors includes a first plurality of field effect transistors and wherein said plurality of switches includes a second plurality of field effect transistors.

228. The voltage reference circuit of claim 223 additionally comprising a pullup stage for pulling up the reference voltage so as to substantially track the external voltage when the external voltage exceeds a predetermined value.

229. The voltage reference circuit of claim 228 wherein said pullup stage includes a plurality of diodes connected between the external voltage and the reference voltage.

230. The voltage reference circuit of claim 229 wherein the reference voltage is the external voltage less a voltage drop across said plurality of diodes.

231. A voltage reference circuit in combination with a power amplifier, said combination comprising:

an active reference circuit for receiving the external voltage and for producing a reference signal having a desired relationship to the external voltage;

a unity gain amplifier responsive to said reference signal for producing a reference voltage; and

a power amplifier stage for amplifying the reference voltage by a factor greater than unity to provide an output voltage.

232. The combination of claim 231 additionally comprising a circuit for supplying the external voltage as the output voltage when the external voltage is below a first predetermined value.

233. The combination of claim 232 wherein said circuit for supplying includes a switch for shorting a bus carrying the external voltage with a bus carrying the output voltage.

234. The combination of claim 232 additionally comprising a pullup stage for pulling up the reference voltage so as to substantially track the external voltage when the external voltage exceeds a second predetermined value.

235. The combination of claim 234 wherein said pullup stage includes a plurality of diodes connected between the external voltage and the reference voltage.

236. The combination of claim 235 wherein the reference voltage is the external voltage less a voltage drop across said plurality of diodes.

237. The combination of claim 234 wherein said combination supplies an output voltage which increases at a first slope substantially the same as a slope of the external voltage during a powerup range, increases at a second slope substantially less than a slope of the external voltage during an operating range, and increases at a third slope greater than a slope of the external voltage during a burn-in range of the external voltage.

247. A method of supplying an output voltage in response to an external voltage, and wherein the output voltage has a first characteristic when the external voltage is in a powerup range, has a second characteristic when the external voltage is in an operating range, and has a third characteristic when the external voltage is in a burn-in range, said method comprising the steps of:

supplying the external voltage as the output voltage when the external voltage is below a first predetermined value defining the powerup range;

producing a reference signal having a desired relationship with the external voltage;

amplifying the reference signal with a unity gain amplifier for producing a reference voltage when the external voltage is above said first predetermined value;

amplifying the reference voltage by a factor greater than unity to provide the output voltage when the external voltage is not being supplied as the output voltage; and

pulling up the reference voltage so as to substantially track the external voltage when the external voltage exceeds said second predetermined value defining the burn-in range.

248. The method of claim 247 wherein said step of producing a reference signal includes the steps of generating a current related to the external voltage, applying the current to a circuit node, and draining the current from the circuit node through an adjustable impedance.

249. The method of claim 248 additionally comprising the step of adjusting the impedance to modify the reference signal.

250. The method of claim 249 wherein said step of adjusting the impedance includes the step of opening a fuse.

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496. (Amended) A voltage reference circuit responsive to an external voltage for supplying a reference voltage, comprising:

a constant current source for supplying a current to a node in response to the external voltage;

a circuit having an adjustable impedance for draining current from the node, wherein said circuit comprises a diode stack comprised of a plurality of transistors connected in series and a plurality of switches each switch for selectively shunting one of said transistors, and wherein each switch is responsive to a control signal; and

a unity gain amplifier responsive to a signal available at the node for producing the reference voltage.

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499. (Amended) The voltage reference circuit of claim 496 wherein said switches are controlled by fuses.

500. The voltage reference circuit of claim 499 wherein said plurality of transistors includes a first plurality of field effect transistors and wherein said plurality of switches includes a second plurality of field effect transistors.

501. The voltage reference circuit of claim 496 additionally comprising a pullup stage for pulling up the reference voltage so as to substantially track the external voltage when the external voltage exceeds a predetermined value.

502. The voltage reference circuit of claim 501 wherein said pullup stage includes a plurality of diodes connected between the external voltage and the reference voltage.

503. The voltage reference circuit of claim 502 wherein the reference voltage is the external voltage less a voltage drop across said plurality of diodes.

504. A voltage reference circuit in combination with a power amplifier, said combination comprising:

a constant current source for supplying a current to a node in response to an external voltage;

a circuit having an adjustable impedance for draining current from the node;

a unity gain amplifier responsive to a signal available at the node for producing a reference voltage; and

a power amplifier stage for amplifying the reference voltage by a factor greater than unity to provide an output voltage.

505. The combination of claim 504 additionally comprising a circuit for supplying the external voltage as the output voltage when the external voltage is below a first predetermined value.

506. The combination of claim 505 wherein said circuit for supplying includes a switch for shorting a bus carrying the external voltage with a bus carrying the output voltage.

507. The combination of claim 505 additionally comprising a pullup stage for pulling up the reference voltage so as to substantially track the external voltage when the external voltage exceeds a second predetermined value.

508. The combination of claim 507 wherein said pullup stage includes a plurality of diodes connected between the external voltage and the reference voltage.

509. The combination of claim 508 wherein the reference voltage is the external voltage less a voltage drop across said plurality of diodes.

510. The combination of claim 507 wherein said combination supplies an output voltage which increases at a first slope substantially the same as a slope of the external voltage during a powerup range, increases at a second slope substantially less than a slope of the external voltage during an operating range, and increases at a third slope greater than a slope of the external voltage during a burn-in range of the external voltage.